



4747 SW 60th Avenue
Ocala, Florida 34474
Tel: (352) 237-6151
Fax (352) 237-0629
E-mail: PSEH@petersonsmith.com

J.L. Peterson, D.V.M.
P.M. Matthews, D.V.M.
J.K. Hahn, D.V.M.
D.E. Slone, D.V.M.
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Umbilical cord problems and hernias **Cate Brewer, DVM**

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The umbilical cord is a 20-40 inches cord that connects the placenta and the fetus. Its primary purpose is to serve as a conduit for the inflow of nutrients and outflow of waste products from the fetus. The structures in the umbilical cord are the two umbilical arteries and single umbilical vein and the urachus. The urachus, a fetal canal, connects the bladder of the foal to the allantois of the placenta. At, or not long after birth, the umbilical cord ruptures spontaneously as a result of the movement of the foal or mare and the structures within normally seal off. The point of rupture is a place approximately ¼ inch from the foal's body. Obviously, inadequate closure of any of these structures creates the potential for bacteria from the external environment to enter the foal causing a hematogenous (blood derived) infection and for urine to leak from the urachus. Because of this, it has become a common practice to "dip the navel" in hopes of warding off potential problems. Despite diligent disinfection and because many foalings occur unsupervised, it is not uncommon for foals to develop problems with their umbilicus. A few of the more commonly encountered problems are discussed below.

Patent Urachus

As mentioned above, the urachus closes at or soon after birth and in the normal foal, it gradually regresses completely as the bladder moves into the pelvic area. A patent urachus, congenital or acquired, occurs when urine drips or flows from the umbilical cord meaning the structure persists as a patent tubular connection between the urinary bladder and the umbilicus. This is usually seen one to ten days after birth. A patent urachus occurs more commonly in foals that strain to defecate because of meconium impactions or with premature umbilical cord separation. A patent urachus is also seen commonly in sick or debilitated foals particularly if there is infection of the umbilical remnants.

Clinical signs are variable from just moisture in the hair around the umbilicus or a consistently moist umbilicus to dripping or streaming urine from the umbilicus. This may occur between or during urinations by the foal. Treatment depends on the severity and duration of signs, and condition of the foal. Asymptomatic foals are usually treated with navel dips or the application of procaine penicillin

two or three times a day. Another treatment used by some is chemical cautery using a silver nitrate stick. These foals should be monitored closely for signs of systemic infection and may call for antibiotic therapy. Patent urachus has been linked with the development of septic arthritis, septic phylitis and septicemia. If the patent urachus is not responsive to conservative therapy or there are signs of infection then surgery is indicated to resolve the problem.

Umbilical Infections or Abscesses

Infection of the umbilical cord, omphalitis, is usually not apparent for one to four weeks post partum. Though infrequent, it is potentially a very serious problem usually caused by poor umbilical hygiene and a dirty environment at the time of birth. Clinical signs vary from an otherwise asymptomatic foal with a hot swollen umbilicus to a fever depressed foal with no external signs of umbilical problems. Although one or more umbilical structures may be affected, the urachus is most commonly involved. Ultrasound examination has become the definitive method for evaluating foals with umbilical infections. Ultrasound allows the examiner to determine the extent of involvement, for example if the infection is limited to the umbilicus itself or has traveled up the umbilical arteries or vein. Thus, if a foal is exhibiting signs of infection and the source of the infection is not obvious, the umbilical structures should be examined closely with ultrasound.

Localized infection to the umbilical remnant can often be treated by lancing the abscess and administering antibiotics chosen based on culture from the abscess. Infections that have traveled up the umbilical arteries or vein are much more difficult to deal with. Although some will respond to broad-spectrum antibiotics, surgery is often necessary to remove the infected structures. Foals three to eight weeks of age may show signs of uroperitoneum suddenly if an urachal abscess ruptures requiring surgery, as well. Problems secondary to infection of the umbilical remnants are not uncommon. Foals may develop an overwhelming bacterial septicemia with dissemination to other organs, particularly bone, joint and lung. For this reason, surgical removal is recommended. Joint infections can be a costly and monumental disease to cure and is one reason for aggressive intervention. Unfortunately, a number of umbilical remnant infections are not recognized until the foal becomes systemically ill or has one or more infected joints. This illustrates the need for a clean foaling environment and proper post partum umbilical care.

Fibrotic Umbilical Remnants

Occasionally some foals will have a rather firm and thick residual umbilical stalk that protrudes from the ventral abdomen. These foals usually are perfectly healthy. Examination of the umbilical remnants results in no indication of pain and or heat. Why these umbilical stalks do not normally slough off is not known. The problem can usually be ignored or removed for cosmetic reasons.

Umbilical Hernias

Umbilical hernias are the most common kind of hernia in horses and are estimated to occur in approximately 2% of foals. These are usually congenital hernias and evidence is available indicating it is hereditary. Some umbilical hernias are thought to be acquired and proposed causes include manually breaking the umbilical cord, excessive straining, umbilical cord ligation, umbilical cord trauma and umbilical cord infection. The majority of umbilical hernias are nonpainful and completely reducible meaning the hernia contents can easily be pushed back into the abdomen. A conservative watch-and-wait approach may be taken with daily digital manipulation and reduction performed by the owner. Closure of the hernia may be seen in one to three weeks. These hernias should be free from any history or evidence of infection. Larger hernias (more than 5cm) or those that fail to respond to conservative treatment should be treated surgically.

Another approach taken is the use of hernia clamps. The hernia to be clamped should be less than 2 inches in diameter and completely reducible. Hernia clamps are usually applied with the foal sedated or anesthetized on its back. They are gently placed against the body wall across the hernia sac after abdominal contents are massaged back into the abdomen. Hernia clamps work by producing necrosis of the exposed hernia sac. The clamp and hernial sac usually slough in ten to twelve days and the skin defect subsequently heals in seven to ten days.

Occasionally umbilical hernias are not reducible, indicating that abdominal content, usually intestine or omentum is incarcerated in the hernia. Foals with incarcerated and subsequent strangulated umbilical hernias usually have swelling, warmth and firmness of the hernial sac. These foals require prompt veterinary attention particularly if the foal is showing signs of colic. Though there is more than one approach to dealing with hernias, the definitive treatment is surgical repair under general anesthesia where the hernia is sutured closed.

Inguinal-Scrotal Hernia

Inguinal hernias are relatively common in colts and usually correct themselves within the first few months of life. In these cases, the small intestine passes through the inguinal canal and potentially into the scrotum. It can occur unilaterally or bilaterally. It can be a secondary occurrence in colts that strain due to a meconium impaction. Usually these foals are asymptomatic but appear to have one or two enlarged testes. These hernias can usually be treated conservatively by manual reduction of the hernia contents back into the abdomen. Bandaging of the affected area in a figure-eight pattern has been reported to be successful in foals with large amounts of abdominal content herniated into the scrotum, as long as the hernia is reducible. These colts need to be stall confined and can usually be seen to resolve in 30 to 60 days.

Occasionally, in inguinal hernias the intestine will rupture the vaginal tunic that surrounds the testicle. These foals will have diffuse swelling and edema of the scrotum, prepuce and medial thigh. This can occur shortly after birth or as late as three to four months. These foals usually show signs of colic and rapidly develop skin abrasions in this area. Colts with this problem require prompt surgical intervention that is usually accompanied by castration to close the inguinal ring.